

IN THE CLAIMS:

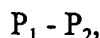
Cancel Claims 1-26, 28-31 and 375-381.

Add new Claims 382-402.

1-381 (Canceled)

382. (New) A method of reducing the damage done by reactive oxygen species (ROS) in a neurodegenerative disease in an animal comprising administering to the animal an effective amount of:

a metal-binding peptide, the sequence of the peptide being:



wherein:

P_1 is:

Xaa_1 Xaa_2 His or

Xaa_1 Xaa_2 His Xaa_3 ;

P_2 is $(Xaa_4)_n$;

Xaa_1 is the N-terminal amino acid of the peptide, Xaa_1 has an unsubstituted α -amino group, and Xaa_1 is glycine, alanine, valine, leucine, isoleucine, serine, threonine, aspartic acid, asparagine, glutamic acid, glutamine, lysine, hydroxylysine, histidine, arginine, ornithine, phenylalanine, tyrosine, tryptophan, cysteine, methionine, or α -hydroxymethylserine;

Xaa_2 is glycine, alanine, β -alanine, valine, leucine, isoleucine, serine, threonine, aspartic acid, asparagine, glutamic acid, glutamine, lysine, hydroxylysine, histidine, arginine, ornithine, phenylalanine, tyrosine, tryptophan, cysteine, methionine, or α -hydroxymethylserine;

Xaa_3 is glycine, alanine, valine, lysine, arginine, ornithine, aspartic acid, glutamic acid, asparagine, glutamine or tryptophan;

Xaa_4 is any amino acid; and

n is 0-5; or

a physiologically-acceptable salt of the peptide $P_1 - P_2$;

wherein the peptide $P_1 - P_2$ or the physiologically-acceptable salt of $P_1 - P_2$ does not have a transition metal ion bound to it when it is administered to the animal.

383. (New) The method of Claim 382 wherein Xaa₁ is aspartic acid, glutamic acid, arginine, or α -hydroxymethylserine.

384. (New) The method of Claim 382 wherein Xaa₂ is glycine, alanine, valine, leucine, isoleucine, threonine, serine, asparagine, methionine, histidine or α -hydroxymethylserine.

385. (New) The method of Claim 382 wherein Xaa₃ is present and is lysine.

386. (New) The method of Claim 382 wherein Xaa₁ is aspartic acid, glutamic acid, arginine, or α -hydroxymethylserine, Xaa₂ is glycine, alanine, valine, leucine, isoleucine, threonine, serine, asparagine, methionine, histidine or α -hydroxymethylserine, and Xaa₃, when present, is lysine.

387. (New) The method of Claim 386 wherein Xaa₁ is aspartic acid or glutamic acid and Xaa₂ is alanine, glycine, valine, threonine, serine, or α -hydroxymethylserine.

388. (New) The method of Claim 387 wherein Xaa₂ is alanine, threonine or α -hydroxymethylserine.

389. (New) The method of Claim 388 wherein Xaa₁ is aspartic acid and Xaa₂ is alanine.

390. (New) The method of Claim 389 wherein Xaa₃ is present and is lysine.

391. (Withdrawn - new) The method of Claim 382 wherein at least one of the amino acids of P₁ other than β -alanine, when present, is a D-amino acid.

392. (Withdrawn - new) The method of Claim 391 wherein all of the amino acids of P₁ other than β -alanine, when present, are D-amino acids.

393. (Withdrawn - new) The method of Claim 391 wherein at least 50% of the amino acids of P₂ are D-amino acids.

394. (New) The method of any one of Claims 382-392 wherein n is 0.

395. (New) The method of any one of Claims 382-393 wherein the neurodegenerative disease is Alzheimer's disease.

396. (New) The method of Claim 394 wherein the neurodegenerative disease is Alzheimer's disease.

397. (New) The method of any one of Claims 382-393 wherein the neurodegenerative disease is Parkinson's disease.

398. (New) The method of Claim 394 wherein the neurodegenerative disease is Parkinson's disease.

399. (New) The method of any one of Claims 382-393 wherein the neurodegenerative disease is senile dementia.

400. (New) The method of Claim 394 wherein the neurodegenerative disease is senile dementia.

401. (New) The method of any one of Claims 382-393 wherein the neurodegenerative disease is multiple sclerosis.

402. (New) The method of Claim 394 wherein the neurodegenerative disease is multiple sclerosis.